

| Ref # | Hits | Search Query  | DBs                          | Default Operator | Plurals | Time Stamp       |
|-------|------|---|------------------------------|------------------|---------|------------------|
| L2    | 424  | 430/108.3.ccls.   | US-PGPUB;<br>USPAT           | ADJ              | ON      | 2005/05/04 11:51 |
| L3    | 114  | l2 and (zr or zirconium)  | US-PGPUB;<br>USPAT           | ADJ              | ON      | 2005/05/04 12:03 |
| L4    | 20   | l3 and (bragg or xrd or xrpd or diffraction)  | US-PGPUB;<br>USPAT           | ADJ              | ON      | 2005/05/04 12:27 |
| L7    | 420  | (430/108.4).CCLS.   | US-PGPUB;<br>USPAT           | OR               | OFF     | 2005/05/04 12:03 |
| L8    | 126  | l7 and (zr or zirconium)  | US-PGPUB;<br>USPAT           | ADJ              | ON      | 2005/05/04 12:03 |
| L9    | 17   | l8 and (bragg or xrd or xrpd or diffraction) not l4   | US-PGPUB;<br>USPAT           | ADJ              | ON      | 2005/05/04 12:03 |
| L10   | 63   | l3 and (peak or "x-ray" or xray)  | US-PGPUB;<br>USPAT           | ADJ              | ON      | 2005/05/04 12:18 |
| L11   | 44   | l10 not l4 not l9   | US-PGPUB;<br>USPAT           | ADJ              | ON      | 2005/05/04 12:18 |
| L12   | 7    | ("4859716"   "4886730"   "5200288"   "5707770"   "5747209"   "6007958"   "6218965").PN.   | US-PGPUB;<br>USPAT;<br>USOCR | ADJ              | ON      | 2005/05/04 12:22 |
| L13   | 1657 | (zr or zirconium) and (bragg or xrd or xrpd or diffraction or peak or xray or "x-ray")  | EPO; JPO;<br>DERWENT         | ADJ              | ON      | 2005/05/04 12:27 |
| L14   | 32   | l13 and toner   | EPO; JPO;<br>DERWENT         | ADJ              | ON      | 2005/05/04 12:49 |
| L16   | 18   | ("6544704" "6468706" "6432590" "6403275" "6303257" "6255028" "6060201" "6221549" "6120960" "6248488" "5994016" "5912100" "5747210" "6168894" "6004715" "5614347" "5519316" "5482807").PN. | US-PGPUB;<br>USPAT           | ADJ              | ON      | 2005/05/04 12:49 |



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Applications viewed:



| Date       | Documents for publication number <u>EP1383011</u>                          | Procedure   | Pages                       |
|------------|--|-------------|-----------------------------|
| 2005-02-24 | ■ <u>Decision to grant a European patent pursuant to Article 97(2) EPC</u> | Search/Exam | 2 <input type="checkbox"/>  |
| 2005-01-26 | ■ <u>Reply to the communication under Rule 51(4)/ 51 (6) EPC</u>           | Search/Exam | 1 <input type="checkbox"/>  |
| 2005-01-26 | ■ <u>Translation of claims</u>   | Search/Exam | 3 <input type="checkbox"/>  |
| 2005-01-26 | ■ <u>Translation of claims</u>   | Search/Exam | 2 <input type="checkbox"/>  |
| 2004-09-22 | ■ <u>Druckexemplar</u>   | Search/Exam | 50 <input type="checkbox"/> |
| 2004-09-22 | ■ <u>Title, classification and designated Contracting States</u>           | Search/Exam | 1 <input type="checkbox"/>  |
| 2004-09-22 | ■ <u>Communication under Rule 51(4) EPC</u>                                | Search/Exam | 4 <input type="checkbox"/>  |
| 2004-01-27 | ■ <u>Reminder for time limit: EXAM fee</u>                                 | Search/Exam | 2 <input type="checkbox"/>  |
| 2003-12-11 | ■ <u>Information on forthcoming publication</u>                            | Search/Exam | 1 <input type="checkbox"/>  |
| 2003-11-21 | ■ <u>Cover letter EPO search report</u>                                    | Search/Exam | 1 <input type="checkbox"/>  |
| 2003-11-21 | ■ <u>Annex to European Search report</u>                                   | Search/Exam | 1 <input type="checkbox"/>  |
| 2003-11-21 | ■ <u>EPO search report</u>   | Search/Exam | 1 <input type="checkbox"/>  |
|            | ■ <u>Confirmation of receipt of electronic priority</u>                    |             |                             |

|             |   |                  |              |                          |
|-------------|---|------------------|--------------|--------------------------|
| 2003-10-22  | <u>document</u>                                   | Search/Exam      | 1            | <input type="checkbox"/> |
| 2003-10-14  | ■ <u>Priority document (electronically filed)</u> | Search/Exam      | 34           | <input type="checkbox"/> |
| 2003-10-14  | ■ <u>Priority document (electronically filed)</u> | Search/Exam      | 30           | <input type="checkbox"/> |
| 2003-07-18  | ■ <u>Request for grant of a European patent</u>   | Search/Exam      | 6            | <input type="checkbox"/> |
| 2003-07-18  | ■ <u>Designation of inventor</u>                  | Search/Exam      | 1            | <input type="checkbox"/> |
| 2003-07-18  | ■ <u>Description</u>                              | Search/Exam      | 45           | <input type="checkbox"/> |
| 2003-07-18  | ■ <u>Claims</u>                                   | Search/Exam      | 3            | <input type="checkbox"/> |
| 2003-07-18  | ■ <u>Abstract</u>                                 | Search/Exam      | 1            | <input type="checkbox"/> |
| 2003-07-18  | ■ <u>Drawings</u>                                 | Search/Exam      | 2            | <input type="checkbox"/> |
| 2003-07-18  | ■ <u>Translation of priority document</u>         | Search/Exam      | 39           | <input type="checkbox"/> |
| 2003-07-18  | ■ <u>Translation of priority document</u>         | Search/Exam      | 47           | <input type="checkbox"/> |
| <b>Date</b> | Documents for publication number EP1383011        | <b>Procedure</b> | <b>Pages</b> |                          |



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# ITEMS FROM EPO ONLINE FILE INSPECTION



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## EUROPEAN SEARCH REPORT

Application Number  
EP 03 01 6341

| DOCUMENTS CONSIDERED TO BE RELEVANT   |  |   |  |
|---|--|---|--|
| Category  | Citation of document with indication, where appropriate, of relevant passages  | Relevant to claim   | CLASSIFICATION OF THE APPLICATION (Int.Cl.7) |
| A   | EP 0 957 406 A (HODOGAYA CHEMICAL CO LTD)<br>17 November 1999 (1999-11-17)<br>* claims 1,6 *<br>* page 4, line 31-55; table 1 *<br>--- | 1-13  | G03G9/097<br>G03G9/087                       |
| A   | EP 1 096 325 A (CANON KK)<br>2 May 2001 (2001-05-02)<br>* claims 1,2; figure 1 *<br>* page 4, line 14,15 *<br>---                      | 1   |  |
| A   | US 2002/001766 A1 (HIGUCHI HIROTO ET AL)<br>3 January 2002 (2002-01-03)<br>* claims 1,5; examples 5,6 *<br>-----                       | 1-13  |  |
|   |  |   | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.7)      |
|   |  |   | G03G   |
| The present search report has been drawn up for all claims  |  |   |  |
| Place of search<br><b>THE HAGUE</b>   |  | Date of completion of the search<br><b>10 November 2003</b> | Examiner<br><b>Stabel, A</b>                 |
| <div style="display: flex; justify-content: space-between;"> <div> <p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone</p> <p>Y : particularly relevant if combined with another document of the same category</p> <p>A : technological background</p> <p>O : non-written disclosure</p> <p>P : intermediate document</p> </div> <div> <p>T : theory or principle underlying the invention</p> <p>E : earlier patent document, but published on, or after the filing date</p> <p>D : document cited in the application</p> <p>L : document cited for other reasons</p> <p>.....</p> <p>&amp; : member of the same patent family, corresponding document</p> </div> </div> |  |   |  |

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Datum/Date

24/02/05

|   |   |
|---|---|
| Zeichen/Ref./Réf.<br>EPP03-072  | Anmeldung Nr./Application No./Demande n°./Patent Nr./Patent No./Brevet n°.<br>03016341.4-1214 1383011 |
| Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire<br>Ricoh Company Ltd. |   |

## DECISION TO GRANT A EUROPEAN PATENT PURSUANT TO ARTICLE 97(2) EPC

Following examination of European patent application No. 03016341.4 a European patent with the title and the supporting documents indicated in the communication pursuant to Rule 51(4) EPC dated 22.09.04 is hereby granted in respect of the designated Contracting States.

The modifications subsequently requested by the applicant and received at the EPO on 00.00.00 have been taken into account.

Patent No. : 1383011  
Date of filing : 18.07.03  
Priority claimed : 19.07.02/JP 2002211125  
19.09.02/JP 2002272809

Designated Contracting States  
and Proprietor(s) : DE-ES-FR-GB-IT-NL  
Ricoh Company Ltd.  
1-3-6 Nakamagome, Ohta-ku  
Tokyo 143-8555/JP

This decision will take effect on the date on which the European Patent Bulletin mentions the grant (Art. 97(4) and (5) EPC).

The mention of the grant will be published in European Patent Bulletin 05/14 of 06.04.05.

Examining Division  
VOGT C H C

VANHECKE H V A

STABEL A K T



Registered letter

## Claims

1. A toner comprising:  
a binder resin;  
5 a colorant; and  
a zirconium compound including zirconium and at least one  
of an aromatic oxycarboxylic acid and a salt thereof,  
wherein the zirconium compound has a main diffraction  
peak (A) at a Bragg ( $2\theta$ ) angle of  $5.5 \pm 0.3^\circ$  and a diffraction  
10 intensity of from 2,000 to 15,000 cps when irradiated with a  
specific X-ray of  $\text{CuK}\alpha$ .
2. The toner of Claim 1, wherein the zirconium compound  
further has a sub-diffraction peak (B) at a Bragg ( $2\theta$ ) angle  
15 of  $31.6 \pm 0.3^\circ$  when irradiated with the specific X-ray of  
 $\text{CuK}\alpha$ , and wherein the diffraction intensity ratio (A/B) of the  
main diffraction peak (A) to the sub-diffraction peak (B) is  
from 3 to 25.
- 20 3. The toner of Claim 1 or 2, wherein the zirconium  
compound has an average particle diameter of from 0.2 to 4.0  
 $\mu\text{m}$ .
- 25 4. The toner of any one of Claims 1 to 3, wherein when  
the zirconium compound is subjected to an extraction treatment  
so as to be dispersed in an ion exchanged water at a concentration  
of  $1.5 \times 10^{-4} \text{ g/cm}^3$ , the ion exchanged water has a conductivity

of from 5 to 20 S/cm.

5. The toner of any one of Claims 1 to 4, wherein the content of the zirconium compound in the toner is from 0.5 to 5 parts by weight based on weight of the binder resin.

6. The toner of any one of Claims 1 to 5, further comprising a volatile component in an amount not greater than 0.1 % by weight based on total weight of the toner when measured at a temperature of from 100 to 150 °C.

7. The toner of any one of Claims 1 to 6, wherein the at least one of an aromatic oxycarboxylic acid and a salt thereof is 3,5-di-tertiary-butylsalicylic acid.

15

8. The toner of any one of Claims 1 to 7, wherein the binder resin comprises a polyester resin in an amount of from 50 to 100 % by weight based on total weight of the binder resin, and wherein the polyester resin has an acid value of from 5 to 25 mg KOH/g.

9. An image forming method comprising:  
charging an image bearer with a charger;  
irradiating the image bearer with light to form  
an electrostatic latent image thereon;  
developing the electrostatic latent image with the toner according to any one of Claims 1 to 8 to form a toner image on

the image bearer;

transferring the toner image onto a transfer sheet with  
a transferer;

fixing the toner image on the transfer sheet upon  
5 application of heat; and  
cleaning a surface of the image bearer with a cleaner.

10. The image forming method of Claim 9, wherein the  
fixing step comprises:

10 transporting the transfer sheet having the toner image  
thereon while at least one elastic roller contacts the transfer  
sheet to fix the toner image thereon upon application of heat.

11. The image forming method of Claim 9 or 10, wherein  
15 the charging is performed while contacting the charger with the  
image bearer.

12. The image forming method of any one of Claims 9 to  
11, wherein the transferring is performed while contacting the  
20 transferer with the image bearer.

13. The image forming method of any one of Claims 9 to  
12, wherein the cleaner is a cleaning blade.